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B7E ECF E102

(56) Documents Cited

GB 2289874 A GB 2270051 A GB 2280300 A
GB 0415843 A US 5125678 A US 5089468 A
US 4441729 A

(58) Field of Search

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INT CL⁶ B62K 15/00

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(54) Folding, dismantieable bicycle with full size wheels and full diamond frame

(57) Rear "triangle" 21 detaches near the seat clamp and pivots, using clamps 24 (detail, fig. 3) about or near the bottom bracket, forwards to overlap the main tube triangle (fig.2), such that bridge 25 rests against rubber stop 27 on down tube 26. Seat, wheels, and cranks may be detached using quick release fittings. The handlebars and stem extension 28 are removably attached to the fork column by a quill or boss with a clamp. Stem 28 may be a "stoker" stem, as used on the rear of a tandem. Gear and brake mechanisms, chain and control cables remain attached during folding and unfolding operations. The rear triangle may be attached to the main frame with a spring and damper at point 30, thus effecting rear suspension. In this embodiment, clamp 24 would remain unclamped, allowing the hinge to act as a suspension pivot.

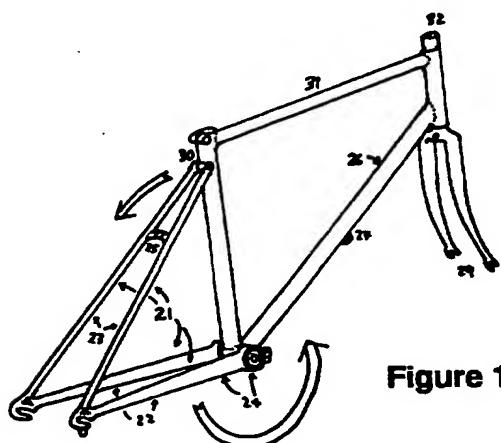


Figure 1

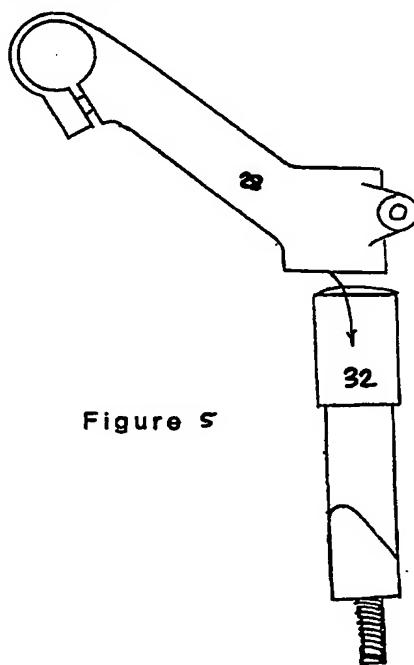


Figure 5

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Figure 1

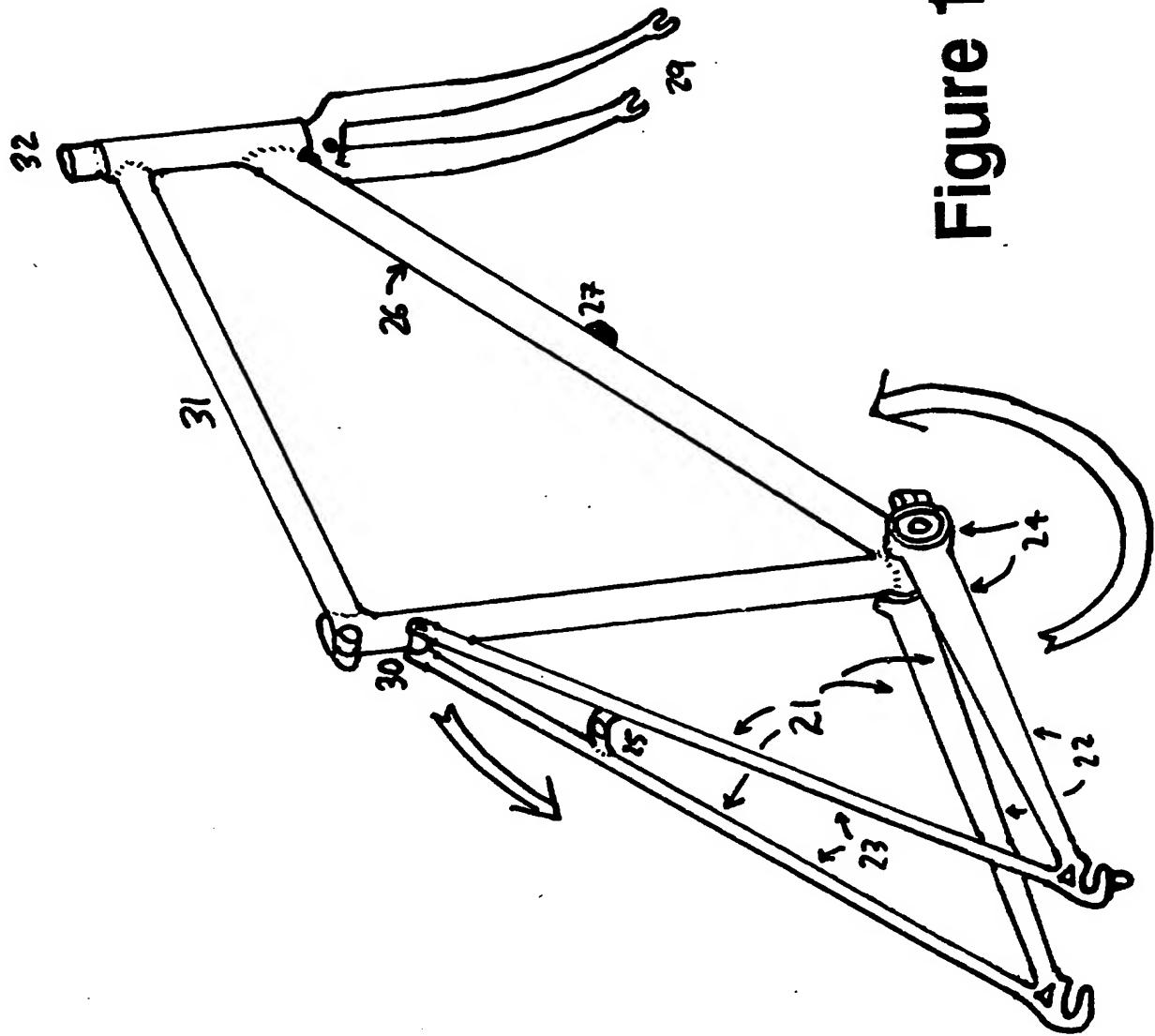


Figure 2

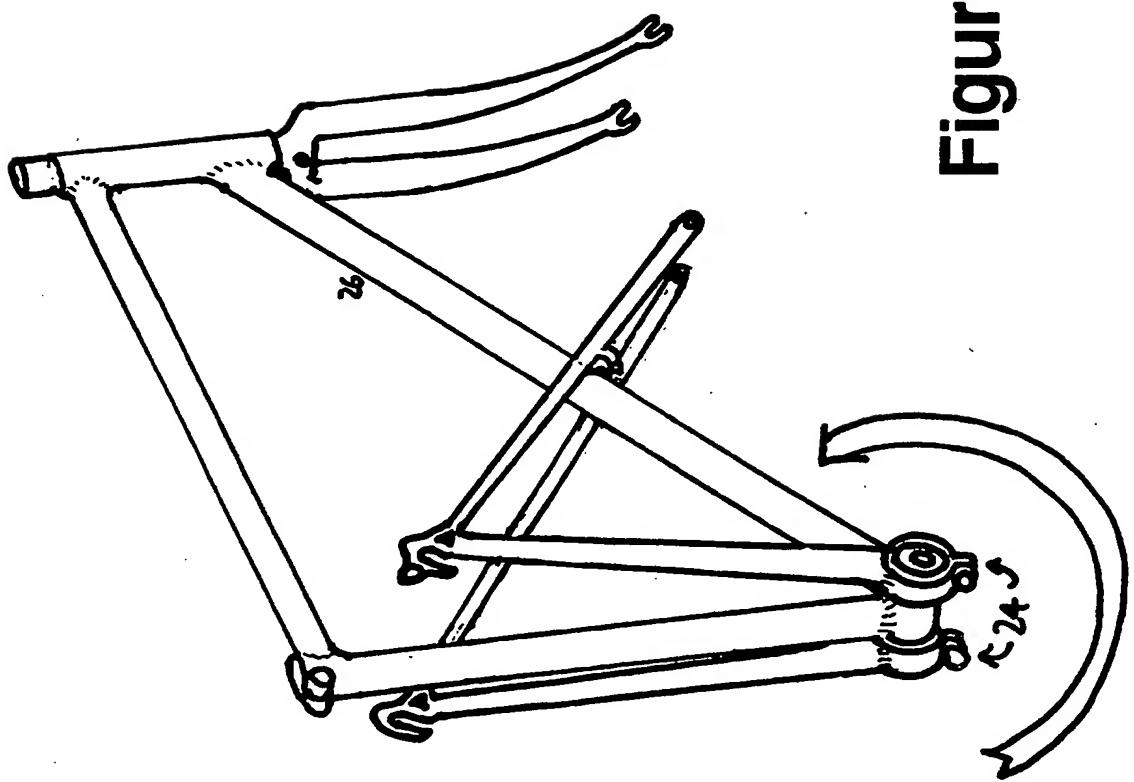
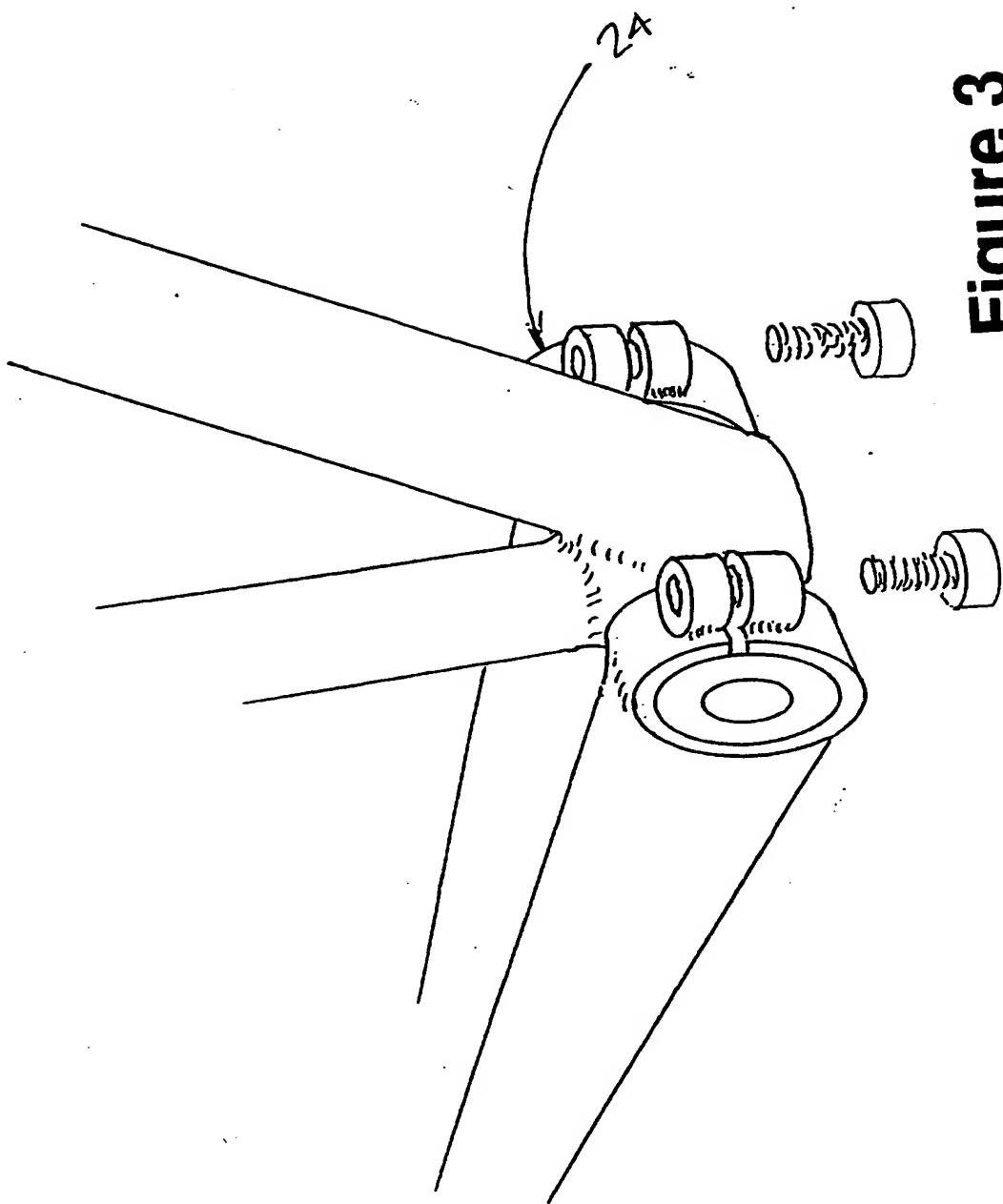


Figure 3



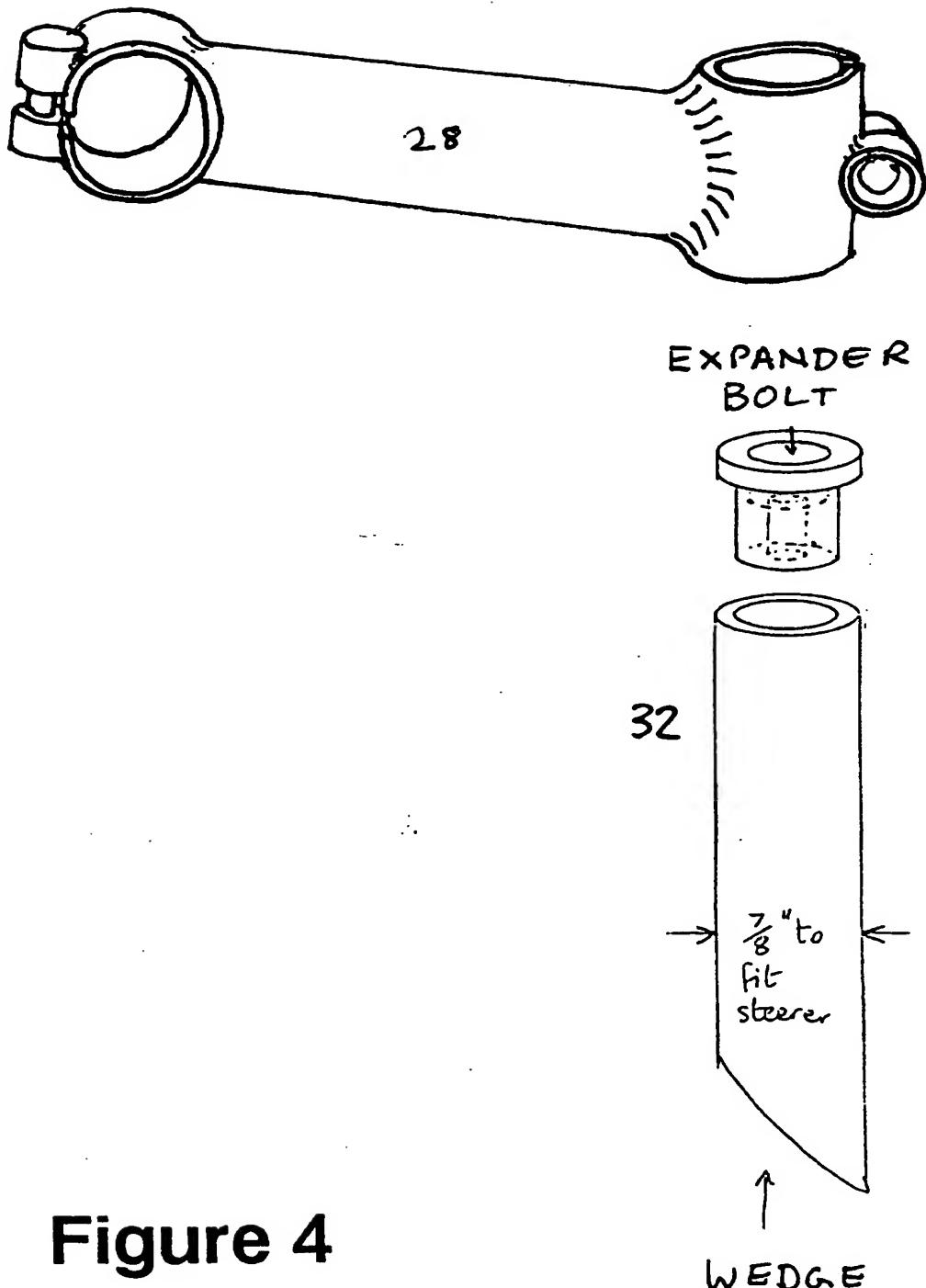


Figure 4

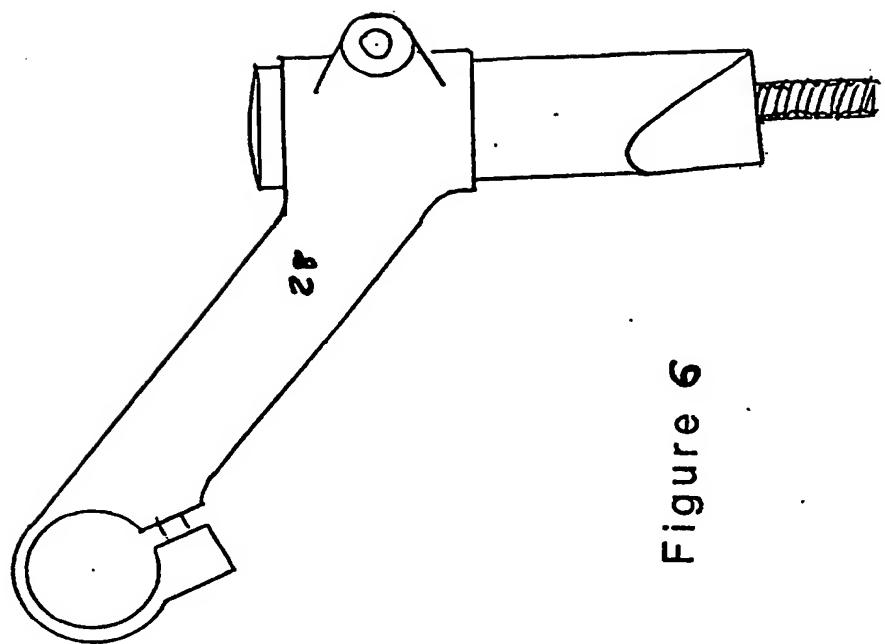


Figure 6

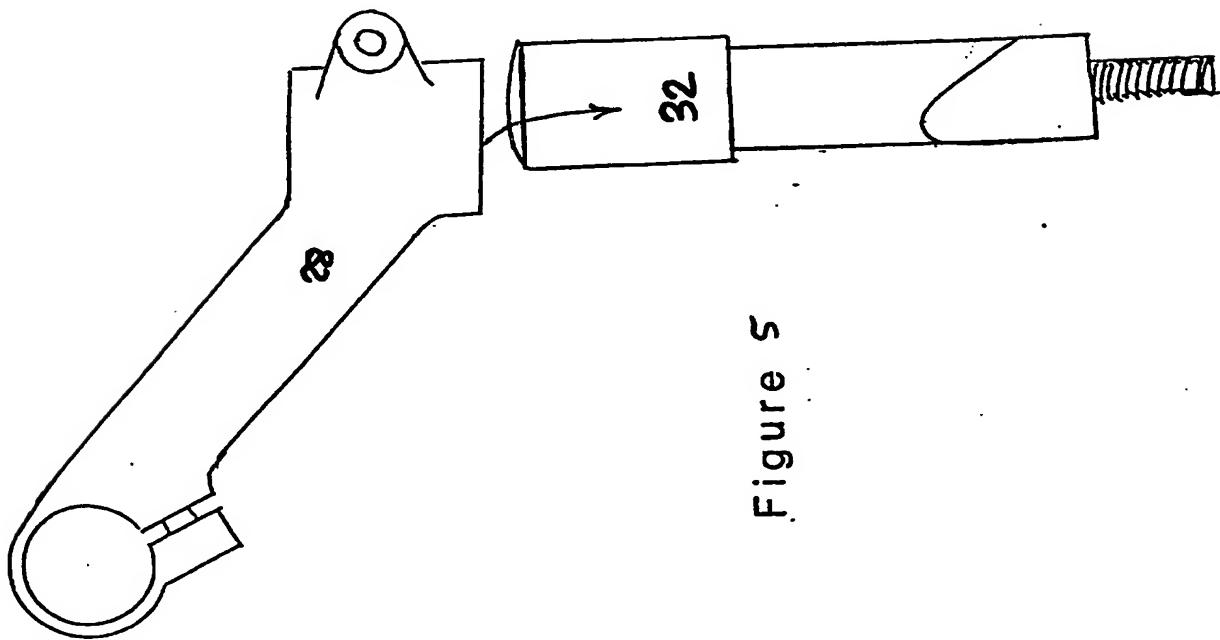


Figure 5

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FOLDING DISMANTLEABLE BICYCLE

This invention relates to a bicycle which can be dismantled and folded for compactness, carriage and storage.

Folding bicycles are readily available but are rarely lightweight orthodox diamond frame designs with full size wheels. Almost all bicycles may be dismantled, though the process may be difficult and require special tools and skills.

Transport companies make few restrictions when conveying covered, collapsed bicycles as passengers' luggage, but often restrict uncovered and fully erected bicycles. Private car luggage spaces are usually too small for full size bicycles and either roof and boot racks are required to carry them or the bicycle must be dismantled extensively.

Left luggage facilities may refuse bicycles as an item but accept a more compact package containing one.

An enclosed, compactly packed bicycle may be more acceptably stored within a dwelling or inside at work for security.

According to the present invention there is provided an almost completely orthodox double diamond frame, whose rear triangle swings about an axis at or near the bottom bracket. The rear triangle in normal use is bolted to the seat tube.

The handlebars, which may be road cycle "drops" or mountain cycle "straights", are fitted to a stem usually found on the rear of a tandem bicycle called a "stoker-stem". This in turn is attached to a boss joined to the steerer tube in the normal fashion.

A specific embodiment of the invention will now be described by way of explaining the dismantling, folding and packing process, with reference to the accompanying drawings in which:

Figure 1 shows the frame in riding geometry

Figure 2 shows the frame folded

Figure 3 shows detail at the bottom bracket

Figure 4 shows details of the stem

" S,6 " " " "

After the wheels have been removed, the rear triangle 21 * (composed of chain stays 22 and seat stays 23) are unbolted, the hinge 24 unclamped and the triangle swung down and forward so that the bridge 25 rests against the down tube 26 itself protected by a rubber buffer 27 (if required). The hinge is then reclamped. The saddle, seat post, cranks, chainring and pedals may be removed by way of their orthodox fixings. The "stoker" stem 28, handlebars and brake-levers are removed by way of its clamp bolt(s) from boss 32. The front fork 29 may be reversed for more compactness. *or quill*

The bicycle now occupies a space little larger than its wheels, and little wider than two wheel widths.

All bolts used in this design may be replaced by standard quick release bolts to minimise the use of tools and speed folding and disassembly.

If required, the hinges may be assembled loosely and a compression spring and damper used to attach the upper part of the rear triangle to the frame at 30 resulting in rear suspension.

Proprietary frame components are used throughout, except the hinge-clamp members 24; cable runs will employ orthodox routings and components, but the rear brake may require a top-tube (31) cable, which may be parted: such accessories are commercially available; a fillet brazed or welded lugless cylindrical bottom bracket shell may be used, or custom castings of the bottom bracket lug obtained.

To re-assemble the bicycle, the steps described above are carried out in the reverse sequence.

* via topeyes at the seatcluster 30

CLAIMS

- 1 A folding bicycle whose frame hinges about an axis near and parallel to or colinear with the bottom bracket axle.
- 2 A folding bicycle whose hinge is clamped rigidly before the folding process.
- 3 A folding bicycle whose hinge is clamped rigidly after the folding process.
- 4 A folding bicycle of diamond frame geometry using orthodox wheels and components.
- 5 A bicycle whose handlebars and stem extension are easily detached from the stem quill or a plug or boss fitted to the steering column.
- 6 A folding bicycle whose folding action is combined with rear suspension.
- 7 A folding cycle employing a completely orthodox rear triangle permanently assembled into one piece composed of chain-stays, seat-stays, top-eyes, ends and brake bridge.
- 8 A folding cycle employing a completely orthodox rear triangle which is clamped to the bottom bracket and bolted to the seat cluster therefore resulting in a rigid frame.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

Application number
GB 9519685.3

Relevant Technical Fields		Search Examiner K STRACHAN
(i) UK Cl (Ed.O)	B7E (ECF)	
(ii) Int Cl (Ed.6)	B62K (15/00)	
Databases (see below)		Date of completion of Search 22 JANUARY 1996
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.		Documents considered relevant following a search in respect of Claims :- 1
(ii)		

Categories of documents

X:	Document indicating lack of novelty or of inventive step.	P:	Document published on or after the declared priority date but before the filing date of the present application.
Y:	Document indicating lack of inventive step if combined with one or more other documents of the same category.	E:	Patent document published on or after, but with priority date earlier than, the filing date of the present application.
A:	Document indicating technological background and/or state of the art.	&:	Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2289874 A	(PARRY) notice that Claim 1 is identical to Claim 1 in this application	1-5, 7 at least
X	GB 2270051 A	(MOORE) Figures 1 and 7	1-4, 7, 8 at least
X	GB 2260300 A	(MOORE) whole document	1-4, 7, 8 at least
X	GB 415843	(CAMILLIS) whole document	1-4 at least
X	US 5125678	(BOGEN) Figures 3 and 6; notice rear suspension	1-4, 6 at least
X	US 5069468	(TSAI) Figures 1 and 2	1-4, 7, 8 at least
X	US 4441729	(BORG-WARNER) Figures 1 to 3	1-4, 7, 8 at least

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

Folding frame for bicycle - has triangular rear frame pivotted to rear of main frame and held in place by clamp near bottom bracket

Patent Assignee: PARRY M G

Inventors: PARRY M G

Patent Family								
Patent Number	Kind	Date	Application Number	Kind	Date	Week	Type	
GB 2296224	A	19960626	GB 9519685	A	19950927	199629	B	
GB 2296224	B	19990120	GB 9519685	A	19950927	199906		

Priority Applications (Number Kind Date): GB 9426060 A (19941220)

Patent Details					
Patent	Kind	Language	Page	Main IPC	Filing Notes
GB 2296224	A		10	B62K-015/00	
GB 2296224	B			B62K-015/00	

Abstract:

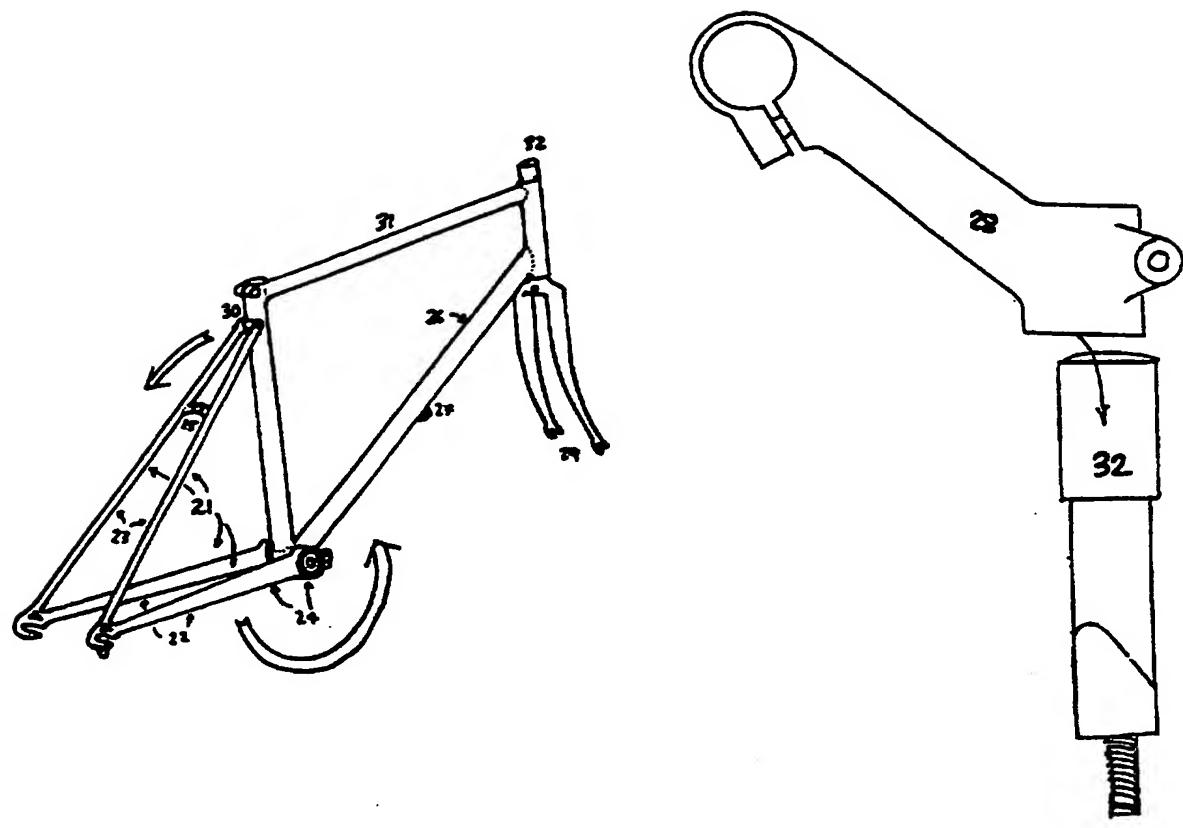
GB 2296224 A

The frame has a rear triangular section (21) which detaches near the seat clamp and pivots using clamps (24) about or near the bottom bracket forwards to overlap the main tube triangle so that the bridge (25) rests against a rubber stop (27) on a down tube (26). The seat, wheels and cranks may be mounted using quick release fittings. The handlebars and stem extension (28) are removably mounted to the fork column by a quill or boss with a clamp.

The gear and brake mechanisms, chain and control cables remain attached during folding and unfolding operations. The rear frame may be attached to the main frame with a spring and damper to form a rear suspension.

ADVANTAGE - Allows convenient transport of folded bicycle.

Dwg.1,5/6



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